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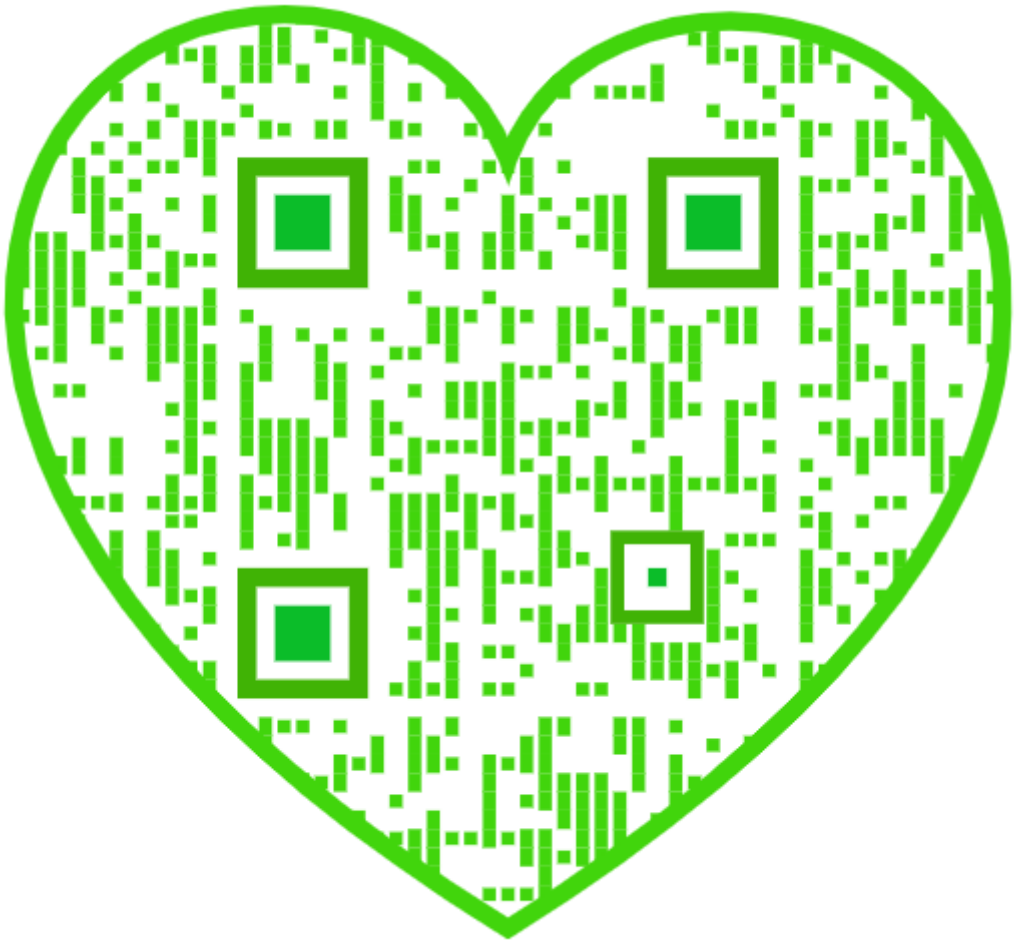

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ROWING

BY

E. J. GIANNINI

Of the New York Athletic Club

COMPLETE MANUAL
WITH ILLUSTRATIONS AND
VALUABLE ADVICE

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INTRODUCTION

ROWING is a sport which has long been popular with the youth of the day, and which grows in favor the more it is practised and the better it is understood. Not only is it followed as a relaxation and an amusement, but it may also be said to have become a part of the physical discipline which is now on all hands admitted to be not incompatible with, but positively conducive to that mental and moral training, in view of the more serious business of life, which forms our national education. Field sports and athletic exercises, among which none is less objectionable than rowing, are now recognized not only as an integral part, but a necessity of any sound system of instruction. *Mens sana* will be found in *corpore sano*. The author of "Tom Brown's School Days"—himself an instance of combined muscular Christianity and intellectual development—has shown us that mind and muscle are not necessarily antagonistic, and that Tom Brown at Oxford was no lower in the class lists for being an accomplished athlete.

Rowing, as practised at the present day, combines more completely than any other open air sport the best features of physical training. Its prominent value as an exercise consists in bringing into play a great number of muscles and bodily organs, thus imparting vigor to the whole frame; and since the art is acquired only by long, continued and assiduous practice, it is more susceptible of being influenced by a judicious system of bodily preparation and training. In comparing the relative merits of different kinds of sports as regards their effect on the mind as well as on the body, that one may be assumed to be the best which affords the most ample scope for the employment of the greatest number of the highest faculties, and which, while calling into play the full measure of muscular strength

and physical endurance, still renders the body perfectly subordinate to, and a quickly responsive and willing instrument of the mind.

Tried by such tests, rowing stands exceptionally high, particularly when we consider it under the aspect of its use in racing; for where success has to be striven for in vigorous and excited competition, not only are strength and endurance needed, but also plenty of that high moral quality known as "pluck," and a correct and delicate appreciation of the best time and method of applying, utilizing to their utmost and perfectly controlling the forces employed. Modern improvements in racing boats have reduced the rowing of the present day to a finer art than ever, rendering it less than formerly the rude conflict of force it was in the early days of racing boats, when such contests were commonly mere exhibitions of uncultivated powers, propelling heavy hulks by main strength.

The standard of rowing is maintained by the universities and colleges of Yale, Harvard, Pennsylvania and Cornell; by the preparatory schools—St. Paul's in particular—and by the principal rowing and athletic clubs—New York A. C., Atlanta, Nassau, Dauntless and many others too numerous to mention. Of course, club matches—in which the generic term may be included college and other races at the universities—tend to uphold it. That it should fluctuate from time to time is a necessity, and that in occasional years it is of an exceptionally good class is only natural, as likewise that in others, it falls to a comparatively low pitch. Speed has increased—of that there is no doubt. The science of "coaching" is more fully known and more readily comprehended than in days gone by, and, when divested of the humbug and bewildering technicalities with which it had been needlessly surrounded, is found a far simpler task than it was believed to be. The art of "training" has been rescued from the depths of empiricism, in which it was too long suffered to dwell and in which the ignorant prejudices of illiterate professionals, who at one time usurped the coaching of amateurs, purposely kept it. At the present time it is conducted on the principles of common sense and hygiene, and so far from being involved in mystery, is now nothing more nor less than an adhesion to a few simple rules of bathing, diet, exercise and rest.

ROWING

HOW TO USE AN OAR AND SCULLS

ROWING is the art of propelling a boat through the water by means of oars or sculls, the person operating sitting with his face toward the stern and his back to the bow or front of the boat. It consists in reaching forward with the oar in the air, then dipping the oar into the water and throwing the body straight backwards, thus dashing the oar through the water, and, finally, pulling the handle home with the arms to the chest by means of the resisting power of stretcher and sliding seat; the oar being the lever, the water the fulcrum, the boat or oarlock the weight to be moved and the weight and strength of the oarsman the power. Rowing with the sculls is the same, except that instead of using one implement or oar with both hands, two implements, called sculls, one in each hand, are substituted; the latter feat can be performed by one individual alone, but when oars are used two men are necessary, and they are often accompanied by an aide-de-camp in the person of a coxswain. The action is twofold, as it is made up of two portions, viz., the stroke and the feather. The stroke is the pulling of the oar through the water with the blade—to which the water offers a resistance in its passage—at right angles to the fluid traversed. Feathering is, strictly speaking, the turning of the oar at the conclusion of the stroke, by dropping the hands and turning down the wrists and thereby bringing the blade into a plane with the surface of the water, but the term is also commonly used as including the carriage back of the oar, in the same position or plane, to recommence another stroke, as the oar is then said to be on the feather.

The art of rowing is an imitative one, and although some persons appear to have an intuitive knowledge of it and are unusually apt

pupils, yet others never can and never will row properly, no matter how persistently they may work. To excel requires a long and willing apprenticeship, commenced at an early age; for of all sports there is, perhaps, none that is slower in being picked up, and certainly none that is so manifestly devoid of a short or a royal road to a knowledge of it. To a casual looker-on it may seem a simple matter to jump into a boat and row her away as cleverly as is daily done by scores of men, but such is far from being the case in practice, and no idea is more deceptive than that the grace and style of an accomplished oarsman or sculler are easily copied. And perhaps the most fatal step to take is to begin to row in very light boats, for nothing is more certain to lead to disappointment or more prejudicial to the acquisition of good style. To this evil practice may be attributed a great deal of the faulty and ineffective rowing which may be witnessed on any river where boat clubs are located. It is short and scratchy and is characterized by a marked absence of length and by utter want of power, because of an improper application of strength —the exact reverse of rowing as it should be.

The laws of rowing are ascertainable and definite. We acknowledge but one standard and form the learner upon one ideal. A perfect oarsman is clearly and ineffacably impressed upon our mental vision, and he is instantaneously singled out by our powers of perception from his fellow laborers. His action and his form are definite, and though they cannot be so easily put down on paper as to be transparent to the uninitiated, yet they are as clearly appreciated by the experienced observer as the sun at noonday. Indeed, the mere way in which a man sits in a boat is a test of his rowing capabilities, because as a rule no good oar sits badly and no bad oar sits well. How to sit and how to hold an oar properly are the first principles in rowing.

Not very long ago an impression prevailed that there were several kinds of perfect rowing, each of them indigenous to certain headquarters of the sport, but this fallacy exists no more, for it is well known and acknowledged that there should be but one text for all, and that upon one model only every oarsman ought to be formed. The characteristics of this model are a firm, clean entrance of the

oar into the water, a powerful, steady and horizontal stroke, a feather, quick, low, yet sufficiently high to clear the water, in whichever state it be, and concise both at the beginning and the finish. How to acquire them will be explained.

An oarsman about to row, having taken his oar in hand, should proceed to embark. This he should do by laying the blade of his oar in the water, if on the outside, or on the float if on the shore-side oar, and then stepping into the boat with his face to the stern, putting one foot on the keelson, lengthwise—not athwart it, for fear of forcing his toe or heel through the boat—and, stooping, should let himself down gently on the seat by placing a hand on each gunwale. He should next ship his oar, placing the handle in the rowlock outside. He should sit square and exactly opposite the handle of his oar, not askew. The body should be erect, with the shoulders slightly thrown back and the elbows close to the flanks.

The oar should be held firmly yet lightly in both hands (see Figures 1 and 2), the outside one close to the end of the handle—but not at the end, capping it—with the fingers above and the thumb underneath it, although some men prefer the thumb of the outside hand in the same position as the fingers—and the inside hand, or that next the loom or body of the oar, from one and one-half to two inches, though not more than two and one-half inches away from, but grasping the oar more convexly than its fellows, the thumb underneath; bearing in mind always that the mechanical power of the outside hand is the greater in the bare pulling, and that the inside hand mainly guides and manipulates the oar. If the inside hand is held too low, a good deal of force is lost, the arm is bent, the shoulders are not squared and the beginning af the stroke is weakened. The forearms should be below the level of the handle, and the wrists dropped and relaxed, the oar being now quiescent, at right angles to the keel of the boat, and feathered. The diverse positions of the two hands and wrists enable the oar to be wielded with greater facility than if alike, and permit of both arms being stretched out perfectly straight—not crooked or bent—when getting forward.

In rowing the stroke, the body should be inclined forwards, with the backbone perfectly straight, the stomach being kept well out and

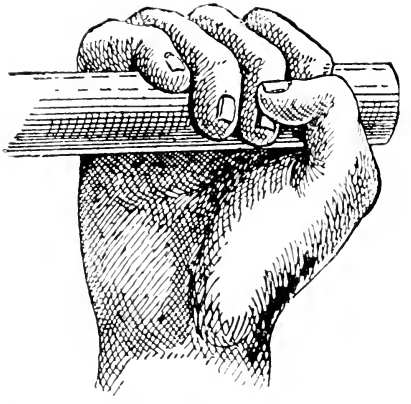

FIG. 1—HOLDING OAR (WRONG).

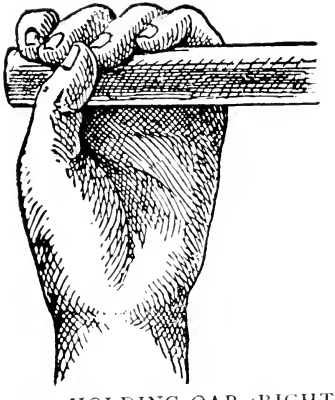

FIG. 2—HOLDING OAR (RIGHT).

down between the legs, the chest forward and raised as much as possible; in fact, the position of the trunk will be like that of a soldier at drill, excepting that in rowing, the great secret is to keep the stomach out, whereas in drilling it must be kept in.

The shoulders should not be allowed to come too far forward (see Figure 3); neither should one be advanced before the other, nor should one be higher than its fellow. The arms should play freely in the shoulder joint, as stiffness here and at the hips is a real hinderance to the best form. They should be perfectly straight from the shoulders to the wrists, and they should be treated in the first part of the stroke as mere connecting-rods between the body and the oar (see Figure 4). If they are crooked, immediately the weight and strength are thrown on the handle of the oar, and thus the first part of the stroke is lost. The inside wrist, however, must be somewhat raised and the outside one bent slightly round in order that the knuckles may be parallel to the oar, as the oar must be firmly grasped with both hands, otherwise the beginning of the stroke will be weak. But it must be kept nearly flat, though pressed down the least bit in the world; in other words it must show only the natural hollow. The hands should hold the oar firmly, not with the tips as usual, but with the whole of the fingers well round the oar, and each separate finger —not merely the first two—must feel the oar distinctly. The knuckles of the thumb must not be more than one and one-half or two inches apart at most, for if kept too far off one another, the inside arm is sure to get bent and the inside shoulder thrown back. The head must be held up, the eyes looking in a direct line astern, and the feet must be firmly planted against the stretcher. In reaching forward, the hands should be shot out straight from the body without the least pause, a peculiar way of doing this, but impossible to describe, though easily discernible, being the mark of first-class oarsmen. Almost as soon as the oar has passed the knees, the wrist should be raised to bring the blade at right angles to the water preparatory to to dipping it, the fact of delaying this motion often resulting in not putting the oar in square. The body of the oarsman and the sliding seat are then drawn forward concurrently by the aid of the stretcher boots in readiness for taking the stroke. Care must, however, be

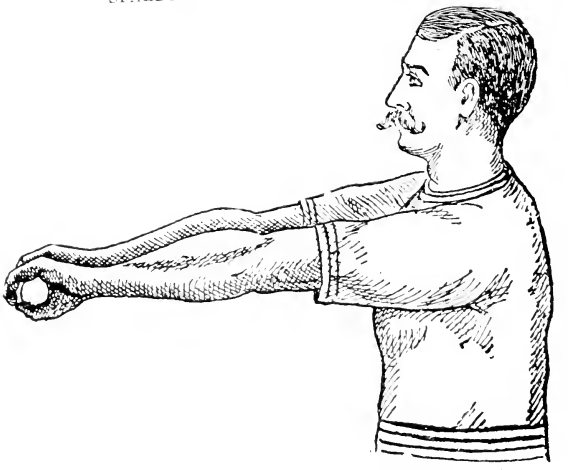

FIG. 3—SHOULDERS BRACED (WRONG).

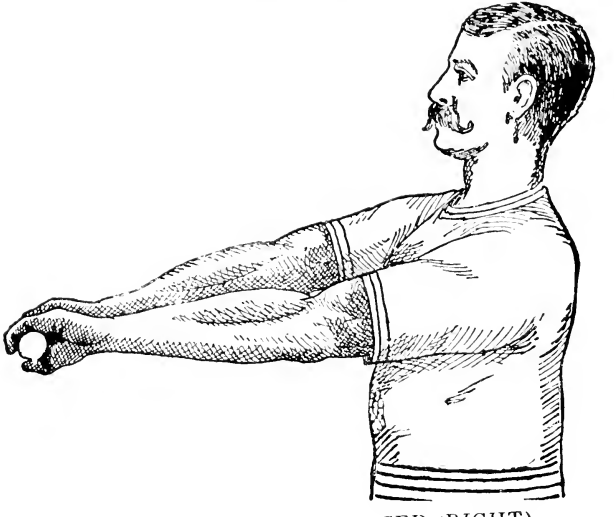

FIG. 4—SHOULDERS BRACED (RIGHT).

taken not to lower the hands too much, as this practice leads to chopping and cutting the stroke.

Men differ slightly in their length of reach, but every one ought to be able to get the handle of his oar over his stretcher, and when there, he should raise his hands straight up at once, as if not raised at once, the result is a hang, and if not straight the stroke is cut. The oar should then be instantaneously covered up to the shoulder, but no further, and immediately it is in this position the stroke should commence. The rower should "knit himself up," as the Irish call it, he should then spring like a bow when the string is loosed, and bring the muscles of his back and legs into play, as far as possible raising his weight off his seat, thus using his whole strength and weight at once and together. The motions at the end of the feather and at the beginning of the stroke are, however, so simultaneous and take place so rapidly that it is very difficult to analyze them. It is in this part of the stroke that five minutes' looking at a good oarsman rowing, is worth more than any number of words: in fact, no words really convey what is wanted. A "coach" may tell his pupil to "hit" the water, to "smite" it, etc., which may convey to the mind of a man who knows how to row what is required, but which can never impart the idea to a tyro. Catching the beginning properly, like swinging, must come from inspiration. It will, however, assist a crew immensely if the coach will get into the boat and row a few short spins at a slow stroke, employing all his power at the beginning and making the crew follow his example, but he must be a strong man, as he will have the whole weight to lift at the commencement of the stroke.

Having thus learned to catch the beginning of the stroke with his body only, the rower should finish it with his arms and shoulders, taking care to send his elbows close past his side, and to drop his shoulders well down and back, keeping his head up and his chest out (see Figures 5 and 6). In the next place, the whole strength of his arms and shoulders should be put into the finish of the stroke. This may seem to be recommending the fault of rowing the stroke out to the end, but it is really not so. This fault arises either from the beginning of the stroke having been shirked, from not using the full force of the body, or from not bending the arms soon enough.

If this happens, the body has to be kept waiting until the arms come up to it, and hence an unseemly jerk. Is is very difficult to determine the exact period at which the arms are to be brought into play, but it ought to be done about the time that the body is perpendicular. Thus the full weight and strength of the rower would be applied, and the oar will be dashed through the water in the way that marks a good oarsman.

The oar should be brought straight home to the chest, the root of the thumbs touching the body about an inch or less below the button of the breast bone where the ribs branch off. Thus every inch of water is made use of. When there, the hands should be dropped straight down and then be turned over and shot out again close to the legs, and the body should follow without the least pause (see Figures 7 and 8). If this be not done the oar will be feathered under water, and the boat buried; water will be thrown onto the next oar and the recovery impeded. In effecting the recovery, the slide is an important agent; but before the forward sliding movement takes place, the body should be swung evenly forward from the hips, not with a jerk or plunge, or quicker at one time than another, but freely and easily, as if the hip joint worked well and not stiffly. Much benefit may be derived from watching two or three of the best oarsmen that can be found, observing them carefully, forming an ideal model, and then endeavoring to copy it.

Two or three points should particularly be borne in mind: First, that when the hands are raised at the commencement of the stroke, and the oar, *ipso facto*, struck down below the surface, the whole of the power should be brought to bear at the moment of the oar's contact with the water, so as to create the greatest effect in the first or vital part of the stroke, one of the most important and too frequently broken laws of rowing; secondly, that the pull home to the chest should be in a perfectly straight line, thus causing a horizontal stroke through the water, which is another law frequently disregarded; thirdly, that the finish of the stroke should be as quiet and easy as it is possible to make it, but without lessening the force applied, which naturally diminishes, because at the first part of the stroke before the rowlock, the oar is at an acute angle to the boat, and after that at an

FIG. 5—FINISH WITH BICEPS (WRONG).

FIG. 6—FINISH WITH SHOULDERS (RIGHT).

obtuse angle. Here it is that one so often sees the stroke wind up with a jerk, as if to make some use of the little strength remaining in the human frame, the oar flirted out of the water, the elbows dug sharply back in an awkward and ungainly manner, and the body harshly and suddenly jolted forward.

Next in importance are the movements described by the oar itself, starting from a state of rest, *i. e.*, feathered and at right angles to the keel of the boat.

When the forward reach is taken, the blade of the oar should travel backwards in the air, horizontally, at the distance of a few inches from the surface of the water—of course, depending upon the state of the surface, whether smooth or rough—until dipped for the stroke. As regards this dip, it is imperative that the blade descend to the proper depth before any force is applied, otherwise the stroke will be cut. To effect this the hands must be raised sharply, and the stroke must be instantaneously commenced. In a word, the oar must be put into the water with energy—not suffered to drop in of its own weight. When on the feather, the oar, after passing the knees, should be gradually turned before immersion, the feather concluding and the stroke beginning at once, with no interval whatever. Hence it will be perceived that the line described by the end of the blade, about which there are numerous theories and a variety of opinions, will be nearly parallel with the water until entering it, when it will immediately be dipped with a *powerful scoop*.

The entry of the oar into the water cannot be too sudden or too decided, so that it be not a chop and a splash; and for this purpose the muscles of the arms should be gathering themselves together as the hands reach forward. It is a well-known and indisputable law that the greatest power can be applied in the first half of the stroke; that is to say, before the oar comes level with or abreast of the rowlock, and that the further aft it goes subsequently to passing that point, the more the power decreases. Such being the case, it is only an act of common sense to endeavor to do as much work as possible, when it will tell most, and when it contributes to lift a boat lightly along the top of the water. On the other hand, if the application of the strength is deferred until the last part of the stroke, it is brought

FIG. 7—HANDS TURNED BEFORE DROPPED (WRONG).

to bear when it is of least service; a great and useless expenditure of power ensues, and the boat, instead of being assisted over the water, is driven down and buried in it, her way being therefore checked. The same result ensues from men letting their weight rest on the seat, and then giving a wrench and feathering under water, instead of letting the weight rest on the stretcher and handle of the oar—in a word, from rowing with the arms rather than with the body, instead of using both.

We now come to the position in which the blade is immersed, and I would observe that this is a most important point. It is said that the blade should descend at right angles to the water. In this opinion I cannot altogether coincide, although even such a position is far superior to an entry with the back of the blade forming an acute angle with the water, and the front of the blade an obtuse one. In either of these cases, however, there is something wrong with the thowl rowed against with the side of the loom which bears against the thowl, or with that on which the oar rests when traversing the water. The proper position is for the front or hollow of the blade to be looking slightly downward upon (not along) the surface; its entry is consequently less than a right angle. This enables the oar to take full and square hold of the water at once; it prevents it running down too deep, and, if firmly and scientifically manipulated, it obviates splashing. At the same time the oar ought not to be turned over too much, as otherwise it will not enter the water easily and will be apt to twist in the hand, besides straining the wrist; but no effort should be made whatever to force it over. The depth to which the oar descends through the medium of this peculiar catch, is to the shoulder or upper end of the blade. In this position it must continue until the hands are up to the chest—not stopping at a distance of a foot from it—when the stroke is concluded, and the feather commences. In the traverse through the water the blade of the oar should be barely covered, and no more—this is an accepted rule—and with the extraordinary light boats used at the present day, strict attention to this principle must be paid. When bringing the stroke to an end, the blade of the oar by a sudden movement—caused by dropping the hands and turning the wrists—is feathered or brought into plane with

FIG. 8—HANDS DROPPED BEFORE TURNED (RIGHT)

the surface of the water from being at right angles to it. This action should take place at the moment when the oar leaves the water, and the lower end of the blade, by being turned suddenly cleanly aft as the loom rotates in the rowlock, throws the water astern in a little eddying whirlpool, and the whole business of the stroke is completed. The appearance of this whirlpool should be carefully studied, as it is a pretty good criterion of how a man is rowing, and if a coach happens to be pulling himself, as is occasionally the case, it is one of the only guides he has in judging how his pupils are rowing behind him. It is almost impossible to describe the look it ought to wear, but plenty of small air-bubbles should keep rising, as in a soda-water bottle, long after the swirl has left the oar; the smaller eddies should be deep and well marked. Very light rowing makes a splash that soon subsides and deep rowing shows no air-bubbles.

The foregoing component parts of a stroke, and its succeeding feather, it must be admitted, are numerous, and to a certain extent apparently incompatible, but yet they are so blended in the work done by an expert oarsman as to seem but one action. Each, however, is fully and correctly performed, and the sum of these separated actions is consequently also perfect.

At the risk of being prolix, I will briefly recapitulate the main points to be recollected. They are as follows: First, a full, fair reach-out over the toes, with both arms perfectly straight; secondly, a square hold of the water at the dip of the oar, with an application of the whole power at the moment of immersion; thirdly, a firm stroke of medium depth, pulled straight through the water, without wavering and without vibration, yet always kept long and duly light; fourthly, a graceful, easy finish, with a clear turn of the water off the after-edge of the blade—the feather being light, moderately low and rapid—and an instantaneous movement when the oar completes the feather, and descends under the water.

Besides pulling, which, as before stated, does not constitute the whole science of rowing, there are various manœuvres of which a knowledge is necessary; these are *paddling*, *easing*, *holding water* and *backing*.

Paddling is simply a milder form of rowing hard, of which the

opposite extreme is spurting. The difference consists merely in the strength applied, and consequently in the number of strokes taken to the minute. It is, without question, the form most suitable for discovering and correcting faults, and it is, therefore, peculiarly valuable for the purpose of coaching crews which have races to row, especially over long distances.

Easing signifies either a reduction in speed from rowing hard to paddling, or else ceasing to row altogether. More commonly, however, it denotes a cessation of rowing, the command of "Easy All" being generally understood to mean "Leave off Pulling." Should it be desired merely to reduce speed, the usual term applied is "Row Easy All." Herein consists the difference between this order and that of "Easy All," which should be given before the conclusion, or, more correctly speaking, immediately after the commencement of a stroke.

Holding water is the act of stopping a boat suddenly, and is accomplished by partially reversing the oar and running it down under the water, so as to check her way; but the oar should be held when deeply immersed, with the blade nearly in the same position as on the feather, but under instead of above the water—certainly not at right angles to it. By a simple twist of the handle from or to the body, the blade can be raised or lowered according as it is found necessary to slacken or increase the power exerted to check the boat; that is to say, by simply turning the blade with its upper edge downwards, towards the nose of the boat, the oar sinks, and by depressing the after or lower edge, it immediately rises to the surface of the water.

Backing is exactly opposite of rowing, and is accomplished by reversing the oar, as in the last-mentioned manœuvre, and pushing instead of pulling the handle. The same principles which apply to rowing apply here also, for the blade should never be sunk too deep, but the back stroke through the water should be long and light, and the oar should be feathered and carried on the feather exactly, as when pulling in the ordinary manner. The action is commenced with the body well back, and is finished but little beyond the knees; here, again, the first being the vital part of the stroke.

Rowing and backing a boat round should, however, be done as gently as possible, for nothing screws an outrigger so much as the application of force under these circumstances. If this is attended to a boat would last twice as long as she otherwise would.

The celerity with which these various movements can be performed, must be acquired by practice, and a rapid change from one to the other can only be skilfully executed after much experience. Theory is all very well as a guide but actual practice and manipulation are the only things capable of rendering a man thoroughly conversant with the technicalities.

When about to disembark the oar should be unshipped and lifted out before leaving the boat.

HOW TO SCULL

Sculling, as already mentioned, is usually performed by one person who sits in the centre of the boat and uses a pair of short oars, technically called "sculls," one in each hand. Double sculling has recently come more or less into fashion and is performed by two persons instead of one.

In holding the sculls it is a mere matter of fancy whether the right hand or the left is uppermost, the sculls overlapping more or less. Some prefer one hand and some the other, but whichever plan seems easiest and most natural, should be followed. The great points to be borne in mind are, to sit upright, to reach out well over the toes, dropping the body between the knees, which should open out as the arms stretch forward; to get firm hold of the water at the moment of contact, as explained in connection with the oar, and to lift the boat *over* the water with the first part of the stroke. The power applied will of itself gradually diminish as the stroke is brought to an end, but the "seaman's dig" and jerk should above all things be avoided, as no boat is so susceptible of downward pressure as a thin, frail, sculling outrigger. The elbows should be kept close to the flanks; the body should not fall back too far, the blades of the sculls should clear the water when on the feather, and the pickup of the body in the recovery should be rapid. In a word, the main principles to be

attended to are the same as in rowing an oar. A sculling boat may be stopped almost dead—in less time than it takes to relate it—by running the sculls down under the water in the same manner as the oar, and backing water is precisely similar, only with two sculls instead of one. To turn, one scull is backed and the other pulled. The sculls, when not in use, should invariably be flat on the water to preserve the equilibrium of the boat.

The great art is to pull equally and evenly with both hands, in order to balance the boat and maintain a straight course, for there being no coxswain, the sculler has to do his own steering. This he accomplishes, partly by keeping the stern of his boat pointed straight at some fixed object astern, and partly by turning his head, not his shoulders or body, round to the right or left to enable him to cast his right or left eye, as the case may be, as far along the water in front as possible. At best it is a difficult matter to keep a straight course, and to do it well can only be acquired by long practice. In a race where men are always more or less under the influence of excitement, the difficulty of steering is even more apparent, and it frequently contributes to defeat, as incompetence in this respect on the part of a competitor can never be altogether counterbalanced by the verbal directions of pilot afloat or ashore. As to the rate of stroke, he is no mean sculler who can pull thirty-five or thirty-six thorough strokes in a minute, and in rough water this rate will be somewhat lessened, for the longer the stroke and the higher the feather, so as to clear the surf, the better.

SELECTION OF CREWS

The preliminary step in making up a crew for a race is to select the men who are to compose it, and in this particular the most consummate judgment and knowledge are all in all, for everything depends upon the person whose duty it becomes to choose no less than to coach them.

As far as physical conformation goes in making choice of a crew, tall men are preferred to short, well built to thin, and heavy men to light, especially for an eight-oar. The limits of weight, which

should not be passed without very strong grounds, may be set at 140 pounds for a minimum, and 175 pounds as a maximum, that is, in condition. The best men will be found to average 160 pounds, although there have been many good amateurs, and among them some of the very best, little if at all exceeding 145 pounds. I am now alluding to an eight-oared crew, more especially if engaged in a race over a long distance. For a four the men and the limits may be much less, but for a pair it is almost a matter of chance what weights come together, though where there is the power of selection, light, quick, active men are to be preferred. No man of 145 pounds should be admitted into an eight if it can by any possibility be avoided without causing detriment to the crew, but it is far better to have a light man who can row than a heavy one who cannot, and who is so much dead weight to transport. Long, bony arms, good back and shoulders, strong legs, and above all things a powerful muscular loin (generally accompanied by extreme width at the hips) are desirable qualifications. Yet it is possible to have too much muscle, especially about the arms and legs. Other things being equal, care should be taken to have all the crew as nearly alike in height, weight and build as possible, since the more closely they approximate in these respects the more nearly alike will they row and the nearer to the same standard can they all be trained. Their lungs should be healthy and of good size. No man with a flat, narrow or otherwise defective chest should be put into a crew. The wind should be good, free from wheezing or cough, the heart healthy, free from palpitation, not easily excited ; but these things can often only be found out after a time.

It frequently happens that the oarsmen put up for selection are ready made, and do not require much, or in fact any instruction in rudiments ; but that they nevertheless, from the different nurseries in which they have been taught to row, want more or less rounding off and polishing, so as to get them into uniformity. The stroke must be first decided upon, and more discretion must be exercised in his appointment than in that of all the other men put together. Scores of men are able to follow time or stroke with the greatest exactitude who have no idea whatever of setting it. They are none the less

valuable in their proper places, but an accomplished stroke who possesses first-rate form, great pluck, a good head on his shoulders, and who can maintain the same number of equally well rowed strokes, whether rapid, medium or slow, and who, when pressed, can raise a spurt without hurrying his men or throwing them into disorder—such a man is a pearl of inestimable price. Some men, on the other hand, are so uncertain and so frequently shift their time and stroke that no crew can keep together and row steadily behind them. A well-tried man is also indispensable at No. 7 to take up the stroke duly. The remainder of the crew must be picked after repeated trials, and after being moved backwards and forwards from one position to another on the eight. It is impossible to write down the exact difference which renders one man more eligible than another; this must be left to the knowledge and discretion of the coach, but if two men are pretty much alike in every respect, preference should be given to him who does his work in the easiest and most commanding manner.

In allotting to the men their respective places in the boat it will be essential to be guided chiefly, but not entirely, by their weight. The heaviest men should be located near the centre, at Numbers 3, 4, 5 and 6—especially at 4 and 5. The after part of the boat should be fairly weighted with the fore part to enable her to ride evenly, otherwise the bow will be depressed, and, in boating phraseology, she will "be by the head," or else her stern will drag and her way be checked, and it is well to remember that the coxswain adds to the weight in the stern of the boat and that the fact of shifting his seat a little backwards or forwards will cause a difference.

It now becomes necessary to say a few words upon the rules to be observed by the oarsmen themselves. They must do their work willingly and with a good grace, paying marked attention to the advice given them by their coach and giving it a careful consideration on proceeding to put it into practice. Each man, when pulling, should fix his eyes on the back of the man in front of him, in order to keep time accurately. Now, there are two kinds of time, viz., the time of the oars and the time of the bodies. The first may be acquired by watching the after oar, but in order to get the second every one must study the man in front of him and try to perform each

individual action and motion at the same instant. Time consists in an immense number of movements taking place precisely at the same moment, and can only be brought about by fixing the attention on one particular person and by performing each action contemporaneously. This is the reason why No. 7 is such an important place in an eight-oar. A conscientious attention to his work is required of every man, and when told of a fault by his coach, and ordered to remedy it, the point should be retained in mind and be acted up to. Unless this is done there is every probability of a recurrence of the error after a brief interval. The advice I once heard a well-known amateur, who was coaching an eight, give to an oarsman who persisted in his fault —more, perhaps, from carelessness than obstinacy—was much to the point. After repeated expostulations and explanation, he at last said: "Think of it, sir, think of it, and bring your mind to bear as you row each stroke." This is exactly what every handler of an oar ought to do.

During the earlier period of training the work which the crew will be called upon to undergo will be long, steady pulling over long journeys, say from eight to fifteen miles. The rate of stroke, which should not be exceeded, varies from twenty-eight to thirty-two to the minute, and this will be found quite quick enough if every stroke is begun at the proper time and fairly rowed out. The same pace should be maintained throughout each day's practice, without quickening or slackening at all. To be well together, every oar must enter and leave the water at the same moment, each stroke being rowed through equally by all. Every back must rise, swing and fall at the same instant; all the oars must catch the water at one and the same time; they must all be rowed through the water at the same depth; all be feathered and carried on the feather to each succeeding stroke so simultaneously as to appear but as one pair of oars, or even as a pair of sculls, and if they all get hold of the water fairly at once the peculiar noise appertaining to this catch, which is like the sound produced by a stone falling perpendicularly into the water after being thrown up into the air—a rotten egg, as it is called—will be distinctly audible some distance off, and the rattle of the oars in their rowlocks and the rush of the water aft off their blades, will each be blended into one.

The coaching of a four, a somewhat more delicate machine, and therefore requiring greater nicety, will be much the same as already described; but it frequently, though by no means necessarily, happens that a four is made up of a portion of an eight-oared crew in training for races at one and the same regatta, and requires nothing more than practice. And now that they row without coxswains, the oarsman who steers by his feet, and is generally in the fore part of the boat, is usually the captain of the crew and gives orders.

Pair-oared rowing is, perhaps, the perfection of the art, and is without doubt the most difficult mode of oarsmanship. The vagaries described by a couple of badly matched men in a pair-oar are as amusing as they are absurd; this is chiefly owing to inability to steer and want of practice. In these boats, which carry no coxswain, two men row a pair of oars, as the term implies. The bowman is usually the responsible individual, as he not only steers by means of a mechanical apparatus connected with the rudder, but directs the stroke what to do; and the duty of the stroke is to keep on rowing uniformly, but yet to pay the strictest attention to the orders of his bowman. The latter, it is scarcely necessary to state, should be the more experienced oarsman, and he steers mainly by working the rudder with his feet, and sometimes, in a lesser degree, by easing or increasing the power he applies to his oar, as circumstances require, according to the course he is desirous of taking, looking over his shoulder as in sculling. A well-practised sculler, therefore, makes the best possible bowman in a pair. If he finds that he cannot get his boat's head around quickly enough, he can still tell the stroke to row easy, but not to stop rowing, as such a case of procedure would most probably culminate in a capsize, and lay out himself accordingly. More practice is required in this branch of the sport than in any other—that is to say, to perform well—but plenty of rowing together, coupled with watchfulness and attention on the part of the bowman, is all that is really wanted. Coaching, as with eights and fours, is seldom or never thought of, though occasionally needed. When training for a race the daily spin should equal, or rather slightly exceed, the course to be gone over, but it will be productive of much benefit to take long, steady rows and to wind up the practice

with the spin in question. A pair should ease up one day before their race. The heaviest man should be placed aft, unless the boat is specially built for a heavy bowman.

TRAINING

The moral and physical man is connected closely and intimately, and if health, strength and longevity is to be secured, it is of absolute importance that while the mind is cultured and refined, an equal attention should be paid to the training and education of the creature. With the body in health, the muscles in full and vigorous action, the mind is far better able to grapple with and overcome the more difficult problems of intellectual philosophy. To those who never reflect, "to eat, drink and sleep," seem all that is necessary to prolong and sustain existence; but man both thinks and acts. The brain, whence flow thought, reflection, mind, requires culture, and the human frame, the most perfect of all machines, with its muscles, bones and sinews, must be educated. The brain overtasked reacts upon the body, producing mal-assimulation, with its train of evils, indigestion, hypochondriasis, low spirits and impaired vital energy. The overtasked body, equally, though perhaps not so rapidly, produces the same results. This being admittedly true in regard to the ordinary conditions of existence, is doubly so, affecting boat racing—a class of contest which taxes the powers and endurance of the human frame to the very utmost. It is indispensable, therefore, that every man who takes part in these competitions should undergo a careful and gradual process of preparation, to which the word "training" is applied. By "training" I mean the physical amelioration of the oarsman as applied to his scientific education—the improvement of the bodily powers—not the inculcation of the principles and correct form of rowing, which has already been dealt with.

Training, then, is the art of physical excellence by which a man is enabled to meet extreme and exceptional demands upon his energies without permanent injury to his powers or system. To acquire this excellence of condition exemplified in increased strength and muscle, improved wind and accelerated speed, it is necessary to submit to the

immediate influence of all the agents whose office is to promote bodily health and strength, in order that when the hour of trial comes, he may perform his allotted task of putting forth all his forces without flagging, without distress, and, indeed with comparative ease. On the other hand, it has been urged that men have been injured and their lives shortened by the severe training they have been made to undergo, but whether it be true or untrue in regard to a time long past, it is more than doubtful, if such is the case now, training being far better understood than it was formerly, and being moreover, conducted on rational principles.

The agents of health consist of exercise, diet, sleep, air, bathing and clothing. How these agents are to be employed so as to produce the best results next claim attention.

First—Exercise of the whole frame is more conducive to health than that of particular limbs. It induces perspiration, and thereby removes noxious matters—consequently it aids in the purification of the body. It tends to proper destruction of the tissues, the removal of worn out and the hastening forward of fresh material for its replacement. Of all exercises, perhaps, none is more calculated to give general tone to the system than that of rowing; at the same time that the wish to excel, stimulated by the prestige which accompanies such excellence imparts vigor and strength to the mind. In doing this it attains three distinct results: it increases the size and power of the voluntary muscles employed; it augments the functional capacity of the involuntary muscles, and it promotes the health and strength of the whole body by increasing respiration and quickening the general circulation. This being the nature, and these the results of exercise, it is imposed upon a man in training for a boat race in two forms: first, rowing; second, running or walking—in the one case training for strength, in the other training for wind. Now, rowing promotes the acquisition of muscular power by giving employment to the arms, the back, the loins, the hips, and more than all, to the legs. It promotes the acquisition of good wind particularly to spare men, but it is advisable to have recourse to a certain amount of walking or running in all cases; but more especially in dealing with men of full habit and fleshy.

Secondly—Diet comes next in importance. Exercise creates a want which it is the place of food to supply. Now, food may be roughly divided into two kinds: first that which is principally applied to the formation of flesh or tissue; secondly that which is applied to the production of heat. In cold countries or weather, fatty or heat-producing food is requisite; but in hot climates, and in summer, a diet mainly of a farinaceous and liquiminous nature is found to be preferable, and the mode of life being, as a rule, less active than in cold climates, flesh-forming food is not so necessary. Quantity is regulated by the appetite. The times for reflection are well known to be at intervals of from four to five hours. The precise hours are immaterial, as they must depend upon the occupation and the most suitable times for practice. Regulation is essential. Stated meals should be taken at stated times. Food should be eaten slowly and masticated well. Drink also should be taken slowly and not too often. As hunger is the warning voice of Nature telling us that our bodies are in need of a fresh supply of food, so thirst is the same voice warning us that a fresh supply of liquid is required. Thirst then, being like hunger, a natural demand, may safely be gratified, and with water in preference to any other fluid. The prohibition often put upon the use of water or fluids in training may often be carried too far. To limit a man to a pint or two of liquid per day, when his system is throwing off three or four times that quantity through the medium of the ordinary secretions, is as unreasonable as to keep him on half rations. The general thirst experienced by the whole system consequent upon great bodily exertion or extreme external heat has but one means of cure—drink is the simplest form attainable.

Thirdly—Sleep is equally necessary to rest the body and to refresh the mind. The amount of time required for this purpose varies not only with individuals but with the same individual at different periods of time. It is influenced by various causes, by the action of the other agents of health and especially by exercise. The growing and immature frame requires a much longer time for recuperation than is found necessary at a later period of life, when growth and development are virtually complete. In the latter case there is but one day's wear to restore, whereas in the former there is a permanent and continuous

demand for the body's enlargement and consolidation. Eight hours are customarily named as the standard amount of sleep required under ordinary circumstances by an adult in fair health, and although seven hours may sometimes be found ample, eight will be better.

Fourthly—The importance of fresh air is generally understood and admitted, but is by no means so universally acted on. A man in training should have at all times pure air and plenty of it, and if his throat and lungs are sound he may sleep with his window partially open, but great care must be exercised in this respect in cold weather. Early rising is always to be commended, for nothing is so exhilarating as the sensation experienced in going out into the fresh, invigorating morning air.

Fifthly—Bathing must be viewed as an agent of health in two distinct aspects, first in its capacity as a cleanser of the skin, next as an agent of considerable tonic power. In the first aspect it addresses the skin as the organ of perspiration only, with the view of removing all impediments to functional ability and arousing it to greater activity; in the second, as the organ of sensation, possessed of great nervous sensibility and influence, acting directly through it on the nervous and circulatory system. With this in view a cold shower should be taken every morning immediately on rising, and may again be resorted to on return from practice.

Sixthly—Clothing is another important agent, for the evaporation of heat and moisture from the surface of the body is impeded, not only by the number of garments worn, but by their size and shape, the closeness of their texture and the nature of the material of which they are made, therefore the lightest woolen or mixed woolen or cotton garments should be worn. They should consist of merino jerseys of a moderately thin texture, one or two thick-knitted woolen jerseys to wear over the thinner ones when practising in cold weather or to be put on when getting out of the boat, flannel caps, woolen comforters, flannel trousers and thin white shoes—which are perhaps best made of canvas and which can be pipe-clayed when dirty—worn over ordinary woolen socks.

Breakfast should consist of broiled meat, such as mutton chops, sirloin steaks (if tender), or occasionally cold meat, tea and bread or

toast and butter. To these may be added some cold chicken or hot grilled fowl—not too highly seasoned—an egg or two, if it agrees with the individual taking it, and apples and oranges. Brown bread is useful as well as white. The meat should be well cooked—just done to a turn, as it is commonly called, not blue or half raw, but yet full of gravy or natural juices; the bread, it is perhaps unnecessary to say, should invariably be stale. Two cups of tea may be taken; it should not be drunk hot or too strong. Salt and pepper may be used to make things tasty. For lunch a slice or two of bread and butter and a glass of sherry; but for a man in strong work such food is insufficient. It will be better to take a slice of cold meat, or a chop and bread, together with half a pint of good, sound ale or a little wine if used to it.

Dinner is the most important meal in the day. Its chief foundations are beef and mutton, either in the form of roast sirloins and ribs of beef, or of roast legs, loins, haunches or saddles of mutton and mutton chops, with here and there a leg for the sake of variety. To these may be added roasted or boiled fowls, game, venison, etc. The use of lamb is good, but salted meats are forbidden and veal and pork are better eschewed. It may appear strange, but the ancient Greek athletes were accustomed to live a great deal on pork, which seems to have been to them what beef and mutton are to us. A bit of fish may be given with advantage. Plenty of stale bread, as well as a due allowance of vegetables, is indispensable. The latter include potatoes, corn—young green—cauliflower, spinach, French beans. A pint of sound ale will be the proper quantity, though it may now and then be increased to a pint and a half in summer. A light pudding is also welcome; it may be varied by an occasional dish of plain cooked fruit. The great thing is to give the men sufficient solid food, but as the most vigorous appetite cannot be always enjoying simple meat and bread, it is proper to vary the dinner, day after day, with other dishes. Bread and butter may conclude the meal, but pulled bread, crisply baked, is far more palatable than the crumb of an ordinary loaf. After dinner a couple of glasses of claret, sherry or port wine may be given to each man, accompanied by some hard, dry biscuit, and perhaps a jelly or an orange or two.

The tendency of men in training is to suffer periodical returns of weakness about every seven or ten days, principally because they are kept in too high condition and are worked too hard. A moderate amount of exercise, combined with a strictly regular life, ought to be sufficient to keep men in good health and without turning them into beef and mutton-eating animals. If they look fat a week before the race it ought to be a subject of congratulation, as the trainer can easily bring them down and has all the more chance of putting finish on them, because he can make them work more at critical periods—in short, he has the crew better in hand. Again, on a long course, it is usually strength, not the perfection of wind, that decides the race, for the stroke is slower than on a short one, so that it is better to be a little undertrained, with strength, than overtrained, with wind.

On the day of the match an ample meal of roast mutton, with bread and a half pint of beer, should be set before the men two or three hours previous to starting, unless the race comes off within a reasonable time after any regular repast—say three hours. If too long a period intervenes, and yet not sufficient for a full meal, a crust of stale bread or a hard biscuit may be eaten, accompanied by a little pale brandy and cold water. The quantity may be a wineglassful of one-half brandy filled up with water. Some men cannot avoid becoming nervous—to a greater or less extent—as the eventful moment approaches, and I know of nothing that acts more suitable than the above. If the race is rowed in heats, with only a brief interval between them, a glass of port wine and morsel of dry biscuit, or a cup of tea without milk or sugar, but with a teaspoonful of brandy in it, will be beneficially partaken of.

It is assumed that each individual has now been educated according to nature, common sense and the correct principles of a trainer's art. When brought out to perform his long-expected task his strength is gathered up, his fully developed muscles are as hard as iron, his wind is sound, his tread elastic, his speed great, his flesh firm, his skin fair and clear, his face hard and healthy, though perhaps fine-drawn, his eyes bright and sparkling like a diamond, and his spirits accompanied by a proper confidence in his ability to go anywhere and do anything of the very best.

These are the essentials of perfect conditions and of success,

Laws of Boat Racing

OF THE

NATIONAL ASSOCIATION OF AMATEUR OARSMEN

Adopted August 8, 1872; Amended April, 1886.

STARTING.

1. All boat races shall be started in the following manner: The Starter, on being satisfied that the competitors are ready, shall give the signal to start.

2. If the Starter considers the start false, he shall at once recall the boats to their stations; and any boat refusing to start again shall be disqualified.

3. Any boat not at its post at the time specified shall be liable to be disqualified by the Umpire.

4. The Umpire may act as Starter if he thinks fit; where he does not so act, the Starter shall be subject to the control of the Umpire.

5. Boats shall be started by their sterns, and shall have completed their course when their bows reach the finish.

WATER.

6. A boat's own water is its straight course, parallel with those of the other competing boats, from the station assigned to it at the start to the finish.

7. Each boat shall keep its own water throughout the race, and any boat departing from its own water will do so at its peril.

The Umpire shall be sole judge of a boat's own water and proper course during the race.

FOULS.

9. It shall be considered a foul, when, after the race has commenced, any competitor, by his oar, boat or person

comes in contact with the oar, boat or person of another competitor; unless, in the opinion of the Umpire, such contact is so slight as not to influence the race.

10. No fouling whatever shall be allowed; the boat committing a foul shall be disqualified.

11. The Umpire may, during a race, caution any competitor when in danger of committing a foul.

12. The Umpire shall decide all questions as to a foul.

13. A claim of foul must be made to the Umpire by the competitor himself, and if possible, before getting out of his boat.

14. In case of a foul, the Umpire shall have the power—(*a.*) To place the boats (except the boat committing the foul, which is disqualified), in the order in which they come in. (*b.*) To order the boats engaged in the race, other than the boat committing the foul, to row over again on the same or another day. (*c.*) To re-start the qualified boats from the place where the foul was committed.

ACCIDENTS.

15. Every boat shall abide by its accidents, except when during a race, a boat while in its own water shall be interfered with by any outside boat, the Umpire may order the race to be rowed over, if in his opinion, such interference materially affected its chances of winning the race.

ASSISTANCE.

16. No boat shall be allowed to accompany a competitor for the purpose of directing his course or affording him other assistance. The boat receiving such direction or assistance shall be disqualified at the discretion of the Umpire.

UMPIRE.

17. The jurisdiction of the Umpire extends over the race and all matters connected with it from the time the race is specified to start until its final termination, and his decision in all cases shall be final and without appeal.

18. The Judge-at-the-Finish shall report to the Umpire the order in which the competing boats cross the line, but the decision of the race shall rest with and be declared by the Umpire.

19. Any competitor refusing to abide by the decision, or to follow the directions of the Umpire, shall be disqualified.

20. The Umpire, if he thinks proper, may reserve his decision, provided that in every case such decision be given on the day of the race.

21. Contestants rowing a dead heat shall compete again after such interval as may be appointed, and the contestant refusing to so row shall be adjudged to have lost the race.

TURNING RACES.

22. In turning races each competitor shall have a separate turning stake, and shall turn from port to starboard. Any competitor may turn any stake other than his own, but does so at his peril.

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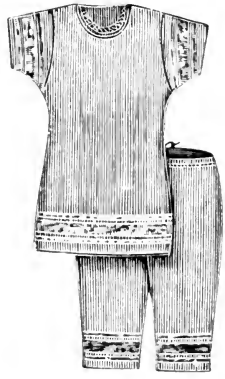

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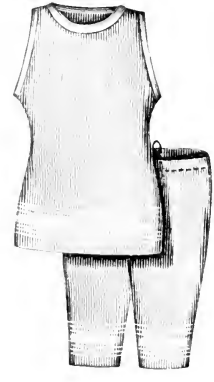

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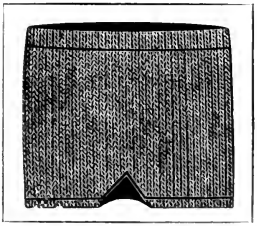

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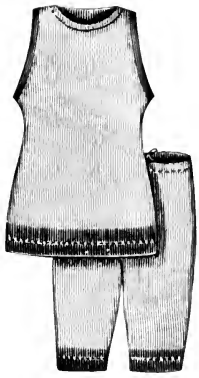
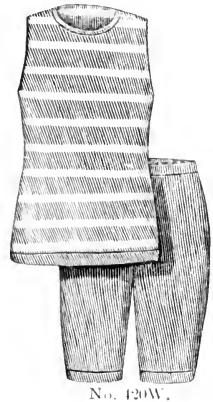


No. 160

ANY STYLE FURNISHED WITH EITHER QUARTER SLEEVE OR SLEEVELESS SHIRT



No. 420W.

Fine two piece Worsted Suit, good weight, striped shirt, plain pants, in following combinations of colors: Light Gray and Blue Striped Shirts, Blue Pants; Black and Red Striped Shirts, Black Pants; Blue and Red Striped Shirts, Blue Pants; Black and White Striped Shirts, Black Pants; Columbia Blue and White Striped Shirts, Columbia Blue Pants; Gray and Red Striped Shirts, Red Pants. Sizes 32 to 44.

No. **420W.** Per suit, **$2.75**

Finest quality full fashioned Worsted two piece suit. Colors Gray and Red, Navy and White, Black and Orange only. Trimmed Shirt and Pants. Sizes, 28 to 44.

No. **160.** Per suit, **$3.75**

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BATHING SUITS

Any style furnished with either quarter sleeve or sleeveless shirt

No. 606

Two piece Cotton Bathing Suit, in Navy Blue with either red or white trimmings; plain pants. Sizes 28 to 44.

No. **606.**

Per suit,

$1.00

No. 608

Two piece finest quality Cotton Bathing Suit; trimmed pants and shirts. Colors Navy and Red, or Navy and White only. Sizes 28 to 44.

No. **608.** Per suit, **$1.50**

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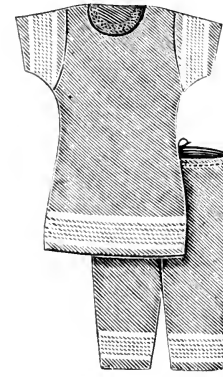
BATHING SUITS

No. 100

Any Style Furnished With Either Quarter Sleeve Or Sleeveless Shirt



No. 28

Two piece Cotton Bathing Suit, latest style; shirts striped, pants plain, in following combinations: Red and Black Striped Shirts, Black Pants; Royal Blue and Black Striped Shirts, Black Pants; Cardinal and White Striped Shirts, Cardinal Pants; Maroon and Blue Striped Shirts, Maroon Pants; Orange and Black Striped Shirts, Black Pants; Royal Blue and White Striped Shirts, Royal Blue Pants. Sizes 32 to 44.

No. **400.** Per suit, **$1.25**

Finest quality Cotton two piece suit, with mercerized silk trimming. Fashioned to shape of body. Made in following colors only: Navy trimmed Red, Navy trimmed White. Sizes 28 to 44.

No. **28.** Per suit, **$1.50**

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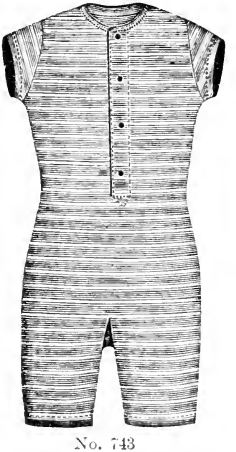
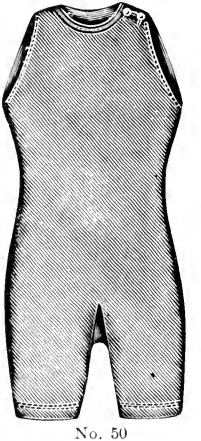
One-Piece Bathing Suits



No. 743



No. 50

Men's Sizes.

32 to 44 inch chest. Fancy stripes, assorted patterns. Button in front.

No. 743. Price, 75c.

Boys' Sizes.

24 to 32 inch chest. Fancy stripes, variety of patterns. Button in front.

No. 521B. Price, 75c.

One-piece Sleeveless Cotton Bathing Suit, solid Navy Blue. Button at shoulder,

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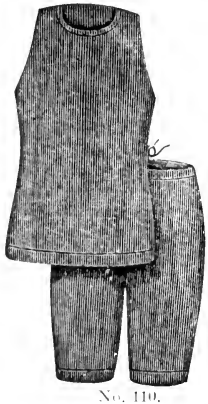
BATHING SUITS

No. 111.

Any Style Furnished With Either Quarter Sleeve or Sleeveless Shirt



No. 110.

Worsted, full fashioned, best quality, in Navy, Black or Maroon. Sizes 28 to 44.

No. **110.** Per suit, **$4.50**

Striped Worsted, same quality as our No. 110, with stripes around sleeve and bottom of shirt and pants. Sizes 28 to 44.

No. **111.** Per suit, **$5.00**

Cut Worsted, fine quality two piece suit, in Navy, Black or Maroon. Sizes 28 to 44.

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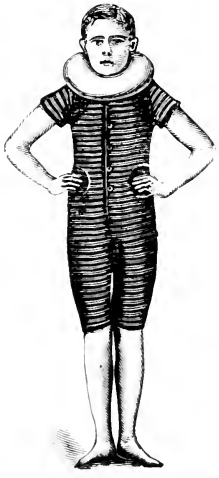

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THE LARGE JACKET WILL FLOAT ANY SIZE PERSON.

The covering for these jackets and collars is a close woven canvas. The stuffing is the best quality ground cork. After the jacket and collars are properly stuffed they are put through a process of waterproofing. They will not soak up water as an ordinary life preserver, but will always remain buoyant. An invaluable device for learning to swim.

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Rubber Pneumatic Jackets and Collars

Made of the best quality rubber and fitted with valve for inflating.

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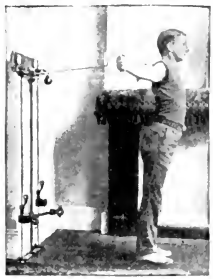


Ten Minutes' Exercise for Busy Men

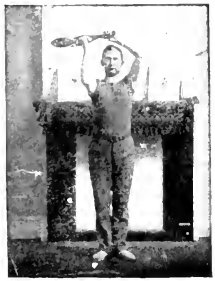
By Dr. Luther Gulick

Dr. Gulick says: "The experience of years has demonstrated the efficiency of the exercises contained in 'Ten Minutes' Exercise for Busy Men' in securing the ends for which they were devised. Many letters have been written by men, testifying to the great benefit which they have secured from these few minutes of simple but vigorous work.

"* * * The correspondence schools of physical training have come into great activity. Their general aim is to build up big muscles. A somewhat careful investigation of them satisfies me that they are inferior to the exercises in this drill for purposes of building up vigor and manliness.

"One of the most vigorous claims of some of these schools, namely, that the heart particularly is benefited by their work, is false, for I have had case after case of men whose hearts have been injured by taking the correspondence schools' work when they were not in condition for it.

"The exercises in 'Ten Minutes' Exercise for Busy Men' are recommended with the confidence of long, successful use. The results secured are better than those possible from the correspondence school work in the specific directions mentioned."



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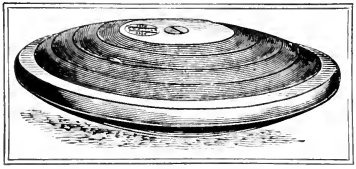
Spalding's Olympic Discus



An exact reproduction of the discus used in the Olympic games at Athens, Greece, by Robert Garrett, of Princeton, the winner. Guaranteed absolutely correct.

OLYMPIC DISCUS. EACH, $5.00

Selected Spruce Vaulting Poles

No. 100	8 feet long, solid.	Each, $3.00
No. 101.	10 feet long, solid.	" 4.00
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Hollow Spruce Poles

Considerably lighter than the solid poles, and the special preparation with which we fill the interior of pole greatly increases the strength and stiffness.

No. 200.	8 feet long, hollow.	Each, $8.00
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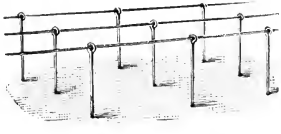
Lanes for Sprint Races



A lane can be made of iron stakes driven in the ground about eighteen inches apart and strung with cords. Stakes of 5/8-inch round steel, two feet in height, with one end pointed, and pigtail hook on other end to hold cord.

100 stakes, with cord for same. **$40.00**

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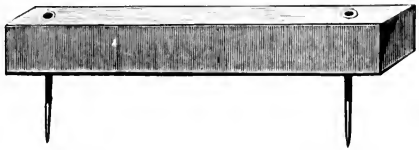
SEVEN-FOOT CIRCLE

The discus, shot and weights are thrown from the 7-foot circle. Made of one-piece band iron, with bolted joints. Circle painted white.

SEVEN-FOOT CIRCLE. EACH, $8.00

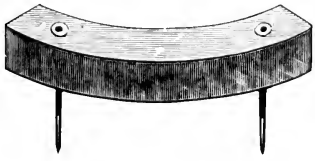
TAKE-OFF BOARD



The take-off board is used for the running broad jump, and is a necessary adjunct to the athletic field. Regulation size, top painted white.

TAKE-OFF BOARD. EACH, $1.75

TOP-BOARD OR STOP-BOARD



The toe-board or stop-board is used when putting the 16-lb. shot, throwing weights and discus, and is curved on the arc of a 7-foot circle. Regulation size, painted white and substantially made.

TOE-BOARD. EACH, $2.00

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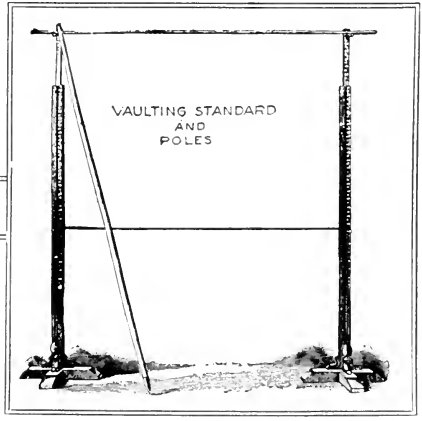
Vaulting Standards



No. **109.**	Wooden uprights, graduated in quarter inches; adjustable to 11 feet. . . . Complete,	**$15.00**
No. **110.**	Wooden uprights, inch graduations; adjustable to 10 feet. . . . . Complete,	**10.00**
No. **111.**	Wooden uprights, inch graduations; 7 feet high. . . . . Complete,	**7.00**

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No. **112.**	Hickory Cross Bar.	Per doz., **$3.00**
No. **113.**	Pine Cross Bar.	" **2.00**

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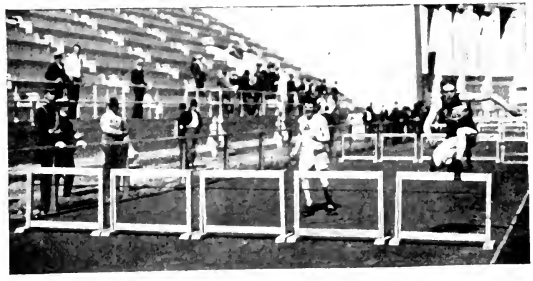
Foster's Patent Safety Hurdle



The frame is 2 feet 6 inches high, with a horizontal rod passing through it 2 feet above the ground. The hurdle is a wooden gate 2 feet high, swinging on this rod at a point 6 inches from one of the sides and 18 inches from the other. With the short side up it measures 2 feet 6 inches from the ground, and with the long side up 3 feet 6 inches. The hurdle can be changed from one height to the other in a few seconds, and is held firmly in either position by a thumb-screw on the rod. It would be hard to conceive any device more simple or more easily handled than this. The invention was used exclusively at the Pan-American sports and has met with the approval of the best known physical directors and trainers of the country.

Single Hurdle, $ 3.50
Per Set of Forty, 100.00

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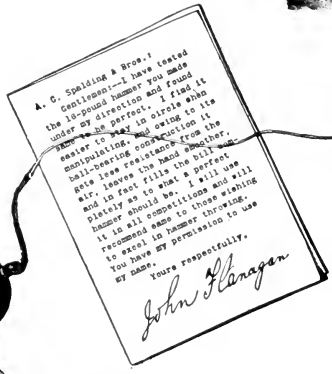
Spalding's Championship Ball-Bearing Swivel Hammer

No. **02**. 12-lb., with Sole Leather Case. **$12.00**
No. **06**. 16-lb., with Sole Leather Case. **12.00**

Flanagan's Record of 171 ft. 9 in., Long Island City, September 3, 1901, was made with this hammer


A. G. Spalding & Bros.:
Gentlemen:—I have tested
the 16-pound hammer you made
under my direction and found
it perfect. I find it
easier to
manipulation, compared with
ball-bearing resistance together.
gets less resistance from the
air, leaves the hand a little sore,
and in fact fills the perfect
plete as to what a hammer
should be. I will use
it in all competitions and will
recommend same to those wishing
to excel in hammer throwing.
You have my permission to use
my name.
Yours respectfully,
John Flanagan

The Spalding Championship Ball Bearing Hammer, originally designed by John Flanagan, champion of the world, has been highly endorsed only after repeated trials in championship events. The benefits of the ball-bearing construction will be quickly appreciated by all hammer throwers. Each hammer put up complete in sole leather carrying case.

No. **02X**. 12-lb., without Sole Leather Case. **$10.00**
No. **06X**. 16-lb., without Sole Leather Case. **10.00**

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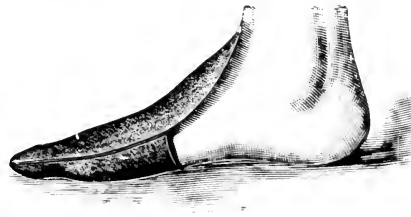
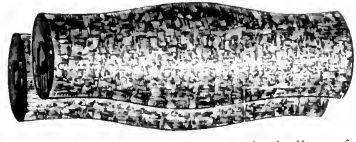
CHAMOIS PUSHERS



Made of fine chamois skin and used with running, walking, jumping and other athletic shoes.

No. 5. Chamois Pushers. Per pair, 25c.

ATHLETIC GRIPS



Made of selected cork and shaped to fit the hollow of the hand.

No. 1. Athletic Grips. Per pair, 15c.

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Printed an heavy Manila Paper or Strong Linen.

		Manila	Linen
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No. 2.	1 to 75.	" .75	3.75
No. 3.	1 to 100.	" 1.00	5.00
No. 4.	1 to 150.	" 1.50	7.50
No. 5.	1 to 200.	" 2.00	10.00
No. 6.	1 to 250.	" 2.50	12.50

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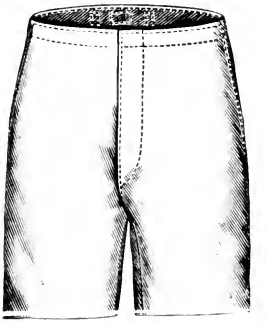
RUNNING PANTS



No. **1.** White or Black Sateen, fly front, lace back . . . Per pair, **$1.25**
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No. **3.** White or Black Sateen, fly front, lace back . . . Per pair, **75c.**
No. **4.** White or Black Silesia, fly front, lace back . . . Per pair, **50c.**

Stripes down sides of any of these running pants, 25 cents per pair extra.

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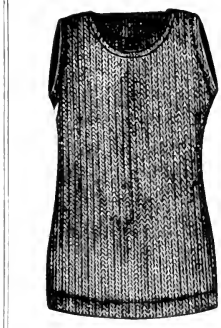


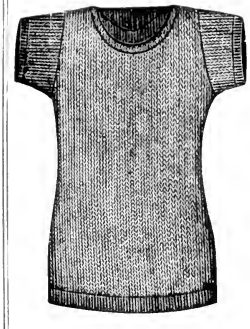
SLEEVELESS SHIRTS

Cut Worsted, full fashioned, Navy, Black and Maroon.

No. 600. Each, $1.25

Sanitary Cotton, White, Navy, Black, Maroon.

No. 6E. Each, 50c.



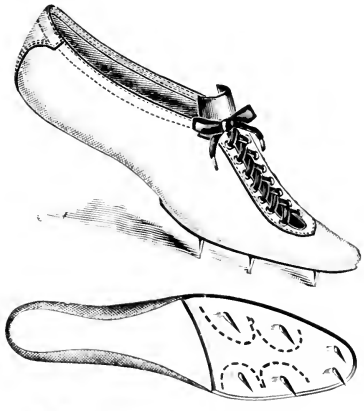
QUARTER SLEEVE SHIRTS

Cut Worsted, full fashioned, Navy, Black and Maroon.

No. 601. Each, $1.25

Sanitary Cotton, White, Navy, Black and Maroon.

No. 6F. Each, 50c.



Running Shoes

This running shoe is made of the finest kangaroo leather; extremely light and glove fitting; best English steel spikes firmly riveted on.

No. 2-0
Per pair, $5.00

Running Shoes

Finest Calfskin Running Shoe; light weight, hand made, six spikes.

No. 10
Per pair, $4.00

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Spalding's Cross Country Shoes

Finest kangaroo leather; low broad heel, flexible shank, hand-sewed; six spikes on sole; with or without spikes on heel.

No. 14C. Per pair, $5.00

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Spalding's Jumping and Hurdling Shoes

Jumping and Hurdling Shoe; fine kangaroo leather, hand-made; two spikes on heel.

No. 14H. Per pair, $5.00

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Running Shoes

Calfskin Running Shoe, machine made; solid leather tap sole holds spikes firmly in place.

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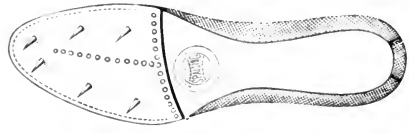
Per pair, $3.50



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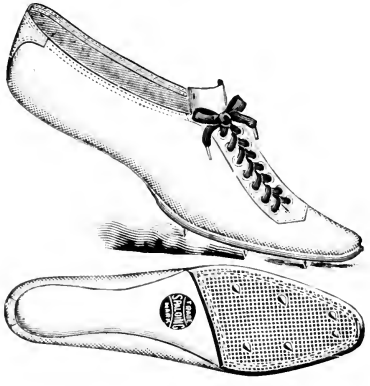

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Best Leather Indoor Jumping Shoe; hand made, rubber soles.

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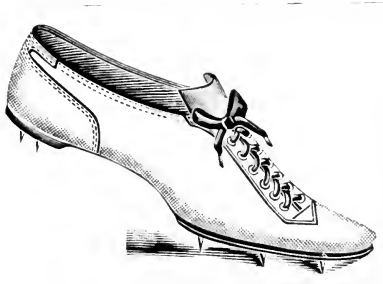

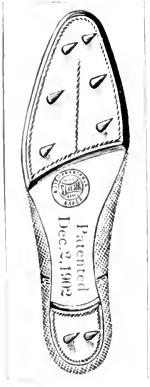

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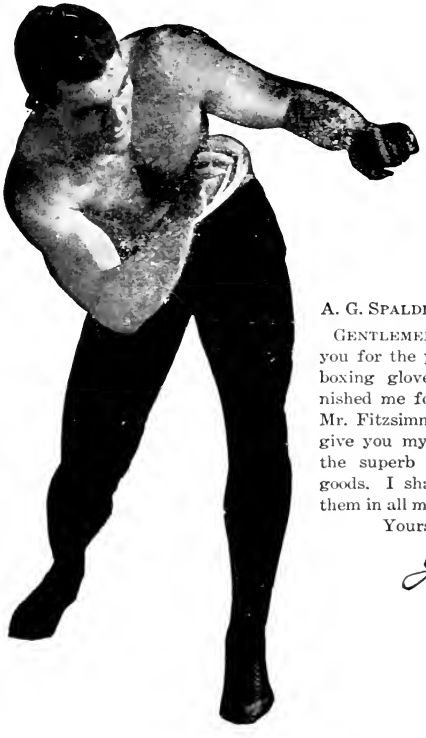

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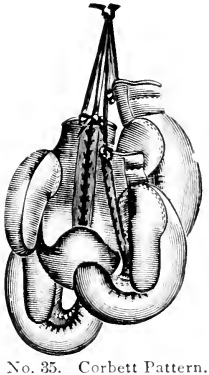

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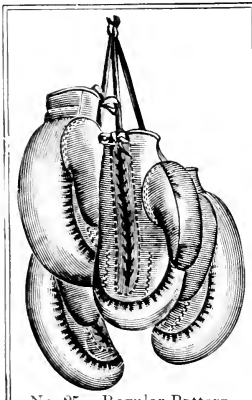

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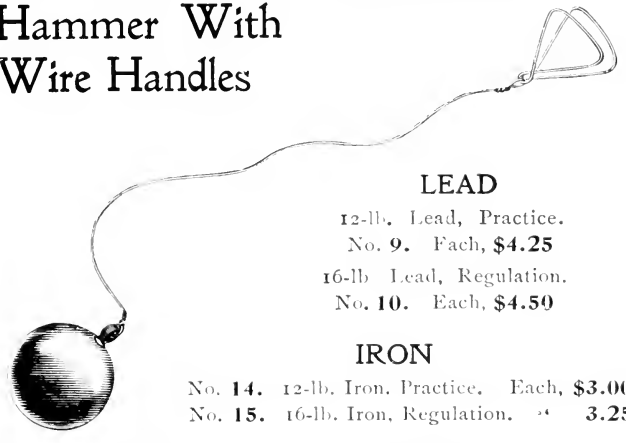

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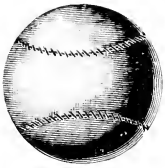

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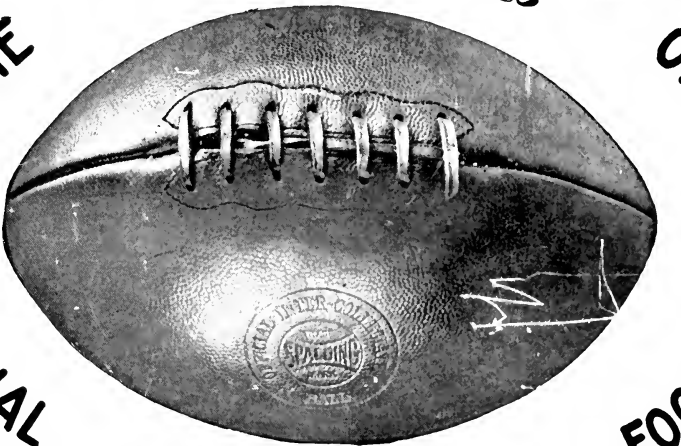

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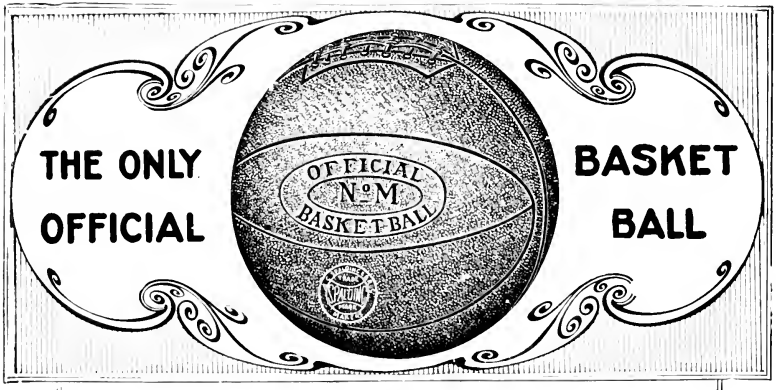

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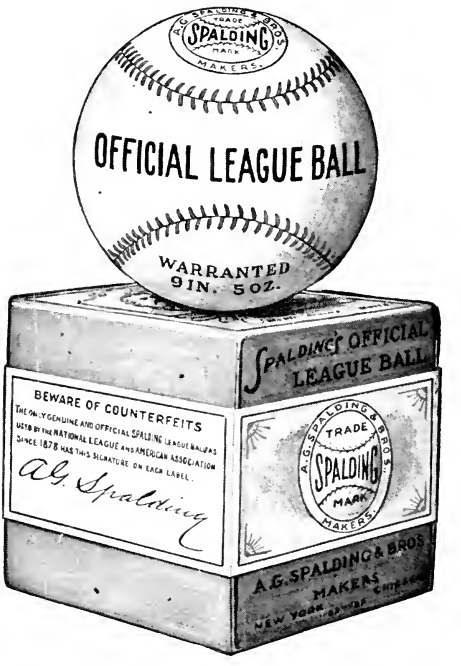

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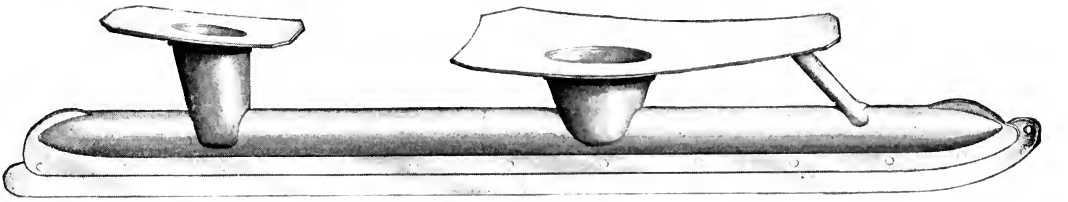
CHICOPEE FALLS . . . . MASS.

The Spalding Tubular Racing Skate



The Spalding Tubular Racing Skate is an up-to-date racing skate. Our aim has been to make the strongest possible skate, and yet one that would be light in weight; in fact, something that the most expert racers could depend upon absolutely. We note below a few particulars of construction that will interest the man who really wants a racing skate that is absolutely first-class in every way. Toe and heel plates are made of the best partly hardened steel, left full size so that they can be fitted to any size shoe. The toe support is stamped and shaped from sheet steel. The tube, toe and heel cups are made from the best sheet steel, drawn to shape without any seams or joints, making them very stiff and the strongest construction known. The toe support, and toe and heel cups are brazed to the toe and heel plates and the tube, making the strongest known joint. The blades are made from the very best Norway tool steel, hardened and tempered, and are 1-16 inch thick. Each blade set in the tube, then riveted and soldered. The blades are polished; the balance of the skate has an aluminum finish.

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Patented

In this bat a principle has been utilized which makes a bat of the same weight many times more effective than the ordinary style under certain conditions, and as an all-around bat we have received many letters from prominent players testifying to the good points of its construction. Timber is the same as that used in our best "Autograph" bats. The knob arrangement at the end enables us to get a more even distribution of weight than is possible under the old construction, and for certain kinds of play the bat is practically invaluable.

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"GOLD MEDAL" RACKET

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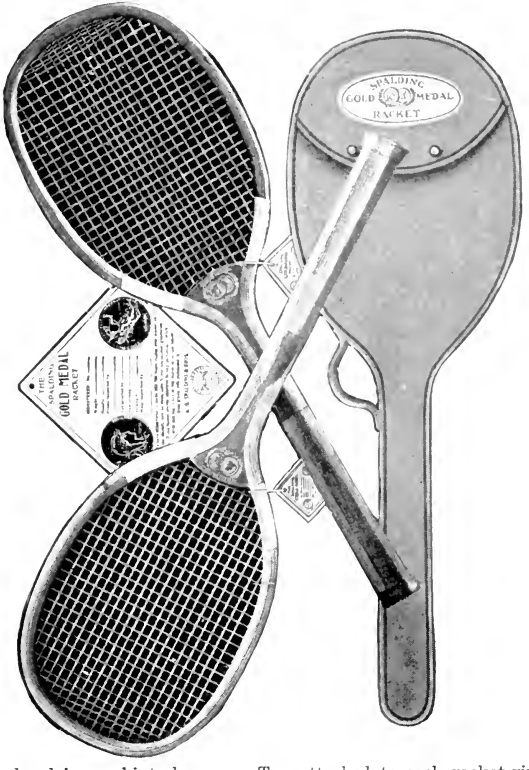

Enclosed in mackintosh cover. Tag attached to each racket gives particulars of special inspection.

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The quality of this ball is absolutely best. It is as near perfect as it is possible to turn out a manufactured article, and, as with everything else on which we place our trade-mark, there is a positive guarantee of reliability and satisfaction with every one.

Perfect Inflation. Perfect Covering. Perfect Sewing.

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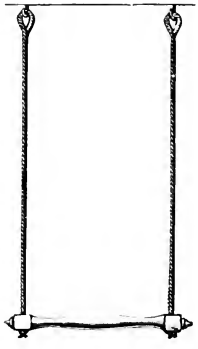

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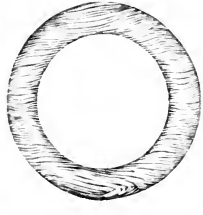

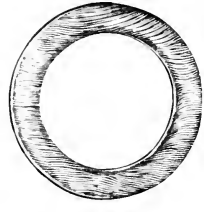

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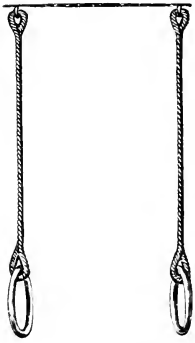

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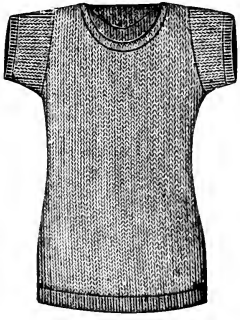

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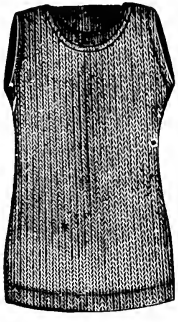

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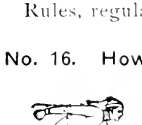

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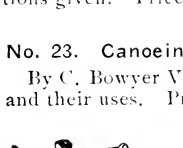

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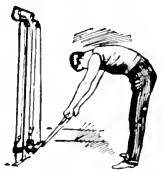

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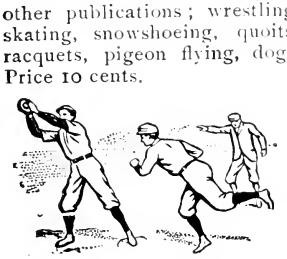

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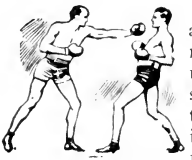

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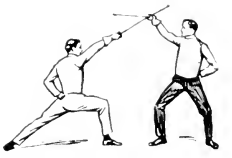

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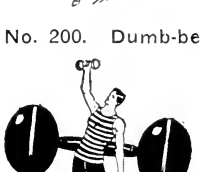

This is undoubtedly the best work on dumb-bells that has ever been offered. The author, Mr. G. Bojus, of New York City, was formerly superintendent of physical culture in the Elizabeth (N. J.) public schools, instructor at Columbia University, and instructor for four years at the Columbia summer school, and is now with the Dr. Savage Normal Institute of Physical Training in New York City. The book contains 200 photographs of all the various exercises, posed under the direct supervision of Mr. Bojus, with the instructions on the opposite page in large, readable type. It should be in the hands of every teacher and pupil of physical culture in the country, and is written and illustrated so clearly that makes it invaluable for home exercise as well. Price 10 cents.

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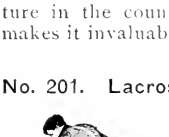

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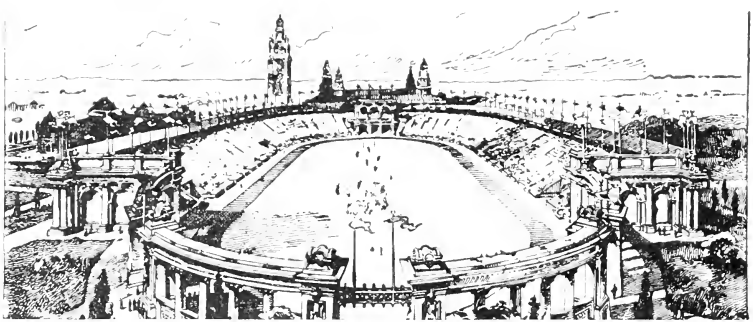

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